AMENDMENTS TO THE SPECIFICATION:

Page 1, please add the following new paragraphs before paragraph [0001]:

[0000.2] CROSS-REFERENCE TO RELATED APPLICATIONS

[0000.4] This application is a 35 USC 371 application of PCT/DE 03/01579 filed on May 15, 2003.

[0000.6] BACKGROUND OF THE INVENTION

Please replace paragraph [0001] with the following amended paragraph:

[0001] ~~Prior Art~~ Field of the Invention

Please replace paragraph [0002] with the following amended paragraph:

[0002] The invention is ~~based on~~ directed to an improved a fuel injection valve for internal combustion engines. ~~of the kind that is known from WO 96/19661. A fuel injection valve of this kind contains a valve needle that can slide in the longitudinal direction in a bore; the combustion chamber end of the bore is provided with a conical valve seat. The valve needle is guided in a section oriented away from the combustion chamber and, between the wall of the bore and the section of the valve needle oriented toward the combustion chamber, a pressure chamber is formed, which can be filled with highly pressurized fuel. The pressure chamber here extends to the valve seat, which is conical and contains at least one injection opening. At the end oriented toward the valve seat, the valve needle has an essentially conical valve sealing surface so that when the valve sealing surface is lifted away from the valve seat, fuel can flow from the pressure chamber, between the valve seat and the valve sealing surface, and to the injection openings. The valve needle is acted upon by a closing force that presses the valve sealing surface against the valve seat and, in the absence of other forces, prevents fuel from being injected through the injection openings.~~

Please add the following new paragraph after paragraph [0002]:

[0002.2] Description of the Prior Art

Please add the following new paragraph after paragraph [0002.2]:

[0002.4] A fuel injection valve of the type with which this invention is concerned is known from WO 96/19661. A fuel injection valve of this kind contains a valve needle that can slide in the longitudinal direction in a bore; the combustion chamber end of the bore is provided with a conical valve seat. The valve needle is guided in a section oriented away from the combustion chamber and, between the wall of the bore and the section of the valve needle oriented toward the combustion chamber, a pressure chamber is formed, which can be filled with highly pressurized fuel. The pressure chamber here extends to the valve seat, which is conical and contains at least one injection opening. At the end oriented toward the valve seat, the valve needle has an essentially conical valve sealing surface so that when the valve sealing surface is lifted away from the valve seat, fuel can flow from the pressure chamber, between the valve seat and the valve sealing surface, and to the injection openings. The valve needle is acted upon by a closing force that presses the valve sealing surface against the valve seat and, in the absence of other forces, prevents fuel from being injected through the injection openings.

Page 3, please replace paragraph [0005] with the following amended paragraph:

[0005] ~~**Advantages of the Invention**~~

SUMMARY AND ADVANTAGES OF THE INVENTION

Please replace paragraph [0006] with the following amended paragraph:

[0006] The fuel injection valve according to the invention~~**, with the characterizing features of claim 1,**~~ has the advantage over the prior art of reducing the wear on the valve seat. To

this end, a hydraulic force is exerted on part of the valve sealing surface in the closed position of the valve needle, thus reducing the overall force on the valve needle in its closing direction. An annular groove between the first and second conical surface hydraulically connects the valve needle to the pressure chamber so that this annular groove always contains the same fuel pressure as the pressure chamber. When the valve needle is closed, this connection increases the hydraulically effective surface area on the valve needle and thus generates an increased force in opposition to the closing force so that the surface pressure in the region of the valve seat is reduced while simultaneously retaining favorable sealing properties.

Page 4, please replace paragraph [0011] with the following amended paragraph:

[0011] ~~**Drawings**~~ BRIEF DESCRIPTION OF THE DRAWINGS

Please replace paragraph [0012] with the following amended paragraph:

[0012] ~~**The drawings show different exemplary embodiments of the fuel injection valve according to the invention.**~~ Other features and advantages of the invention will be apparent from the description contained below, taken with the drawings, in which:

Page 5, please replace paragraph [0014] with the following amended paragraph:

[0014] Fig. 2 shows an enlargement of Fig. 1 in the region of the valve seat~~;~~ with the valve needle ~~is~~ being shown in the position in which it is just beginning to touch the valve seat,

Please replace paragraph [0019] with the following amended paragraph:

[0019] ~~**Description of the Exemplary Embodiments**~~

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Please replace paragraph [0020] with the following amended paragraph:

[0020] Fig. 1 shows a longitudinal section through a fuel injection valve according to the invention. A valve body 1 contains a bore 3 whose end oriented toward the combustion chamber is closed by a conical valve seat 11. The valve seat 11 is adjoined at the downstream end by a blind bore 21 (Fig. 2) that has injection openings 9 extending from it, which connect the blind bore to the combustion chamber of the engine. The bore contains a longitudinally sliding piston-shaped valve needle 5, whose guide region 105 is guided in a sealed fashion in a guide section 103 of the bore 3. Starting from the end of guide region 105 of the valve needle 5 oriented toward the valve seat 11, the valve needle 5 tapers, forming a pressure shoulder 13, and transitions into a shaft 205 that has a smaller diameter than the guide region 105. The combustion chamber end of the valve needle 5 that directly adjoins the shaft 205 is comprised of an essentially conical valve sealing surface 7, which cooperates with the valve seat 11 and whose precise form and function will be explained further below. Between the shaft 205 and the wall of the bore 3, a pressure chamber 19 is provided, in the form of an annular conduit that widens out radially at the level of the pressure shoulder 13. The pressure chamber 19 can be filled with highly pressurized fuel via a supply conduit 25 extending in the valve body 1; the supply conduit 25 feeds into the radially widened region of the pressure chamber 19.

Page 7, please replace paragraph [0022] with the following amended paragraph:

[0022] Fig. 2 is an enlargement of Fig. 1 in the region of the detail labeled II, i.e. in the region of the valve seat 11. The valve sealing surface 7 of the valve needle 5 has a first conical surface 30 that directly adjoins the shaft 205. The first conical surface 30 here has an opening angle that is smaller than the opening angle of the conical valve seat 11 so that a

difference angle δ_1 is formed between the first conical surface 30 and the valve seat 11. Downstream in the fuel flow toward the injection openings 9, the first conical surface 30 is adjoined by an annular groove 35, which encompasses the entire circumference of the valve needle 5 and extends in a radial plane of the longitudinal axis 15 of the valve needle 5. The annular groove 35 is adjoined on the downstream side by a second conical surface 32, which also constitutes the end of the valve needle 5. The opening angle of the second conical surface 32 is greater than the opening angle of the valve seat 11 so that a difference angle δ_2 is formed between these two surfaces. The two conical surfaces 30, 32 and the annular groove 35 are disposed on the valve sealing surface 7 so that the circular intersecting line between the imaginary extension of the first conical surface 30 and that of the second conical surface 32 is at the level of the annular groove 35. Since the annular groove 35 is let into the valve sealing surface 7 at the end of the production process of the valve needle 5, it is therefore assured that the upper edge 37 of the annular groove 35, which constitutes the limit line of the first conical surface 30, and the sealing edge 38, which constitutes the limit line of the second conical surface 32, extend precisely in a radial plane of the longitudinal axis 15. At least two connecting bores 40 extending in the valve needle 5 connect the annular groove 35 to the pressure chamber 19. The connecting bores 40 here are preferably disposed distributed uniformly over the circumference of the valve needle 5. This consequently assures that independent of the position of the valve needle 5 in relation to the valve seat 11, the annular groove 35 contains the same fuel pressure as the pressure chamber 19 on an at least essentially continuous basis.

Page 9, please replace paragraph [0025] with the following amended paragraph:

[0025] Fig. 5 shows another exemplary embodiment in which the annular groove 35, as in the exemplary embodiments shown in Figs. 2 and 3, is connected to the pressure chamber by means of a connecting bore, but the connecting bore here is embodied as a cross bore 44. The cross bore 44 extends from the annular groove 35 and leads crosswise through the valve needle 5 to the surface of shaft 205. A cross bore 44 of this kind is easier to produce than a connecting bore 40 of the kind shown in Fig. 2 because in this case, there is a greater angle in relation to the surface of the valve needle 5 at both ends of the cross bore 44. Fig. 6 shows a cross section through the injection valve shown in Fig. 5, along the line VI – VI. The annular groove 35 is connected to the pressure chamber via several cross bores 44, these cross bores 44 extending parallel to each other, as shown in this projection of the plane indicated by the line VI – VI in Fig. 5. In this instance, though, the cross bores 40 are aligned so that the end of the cross bore 44 emerging from the shaft 205 is disposed as far toward the opposite side as possible from the end in the annular groove 35 without causing the cross bores 44 to intersect. The cross bore 44 here can have a diameter that corresponds to the width of the annular groove 35 or can also have a smaller diameter.

Page 11, please add the following new paragraph after paragraph [0026]:

[0027] The foregoing relates to preferred exemplary embodiments of the invention, it being understood that other variants and embodiments thereof are possible within the spirit and scope of the invention, the latter being defined by the appended claims.